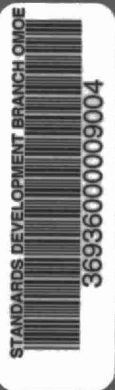


BBCA



THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF BOBCAYGEON

COUNTY OF VICTORIA

1966

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THE
ONTARIO WATER RESOURCES
COMMISSION

Report
on a
WATER POLLUTION SURVEY
of the
VILLAGE OF BOBCAYGEON
in the
COUNTY OF VICTORIA

Division of Sanitary Engineering

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WATER POLLUTION SURVEY

of the

VILLAGE OF BOBCAYGEON

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WATER POLLUTION SURVEY

of the

VILLAGE OF BOBCAYGEON

INTRODUCTION

A water pollution survey of the Village of Bobcaygeon was performed on May 3, 1966. Surveys of this type are made by the Ontario Water Resources Commission in order to locate potential and existing sources of water pollution. Recommendations are made concerning the abatement of conditions which adversely affect water quality. Appended to this report is a map of Bobcaygeon showing the locations of sampling points within the Village.

INTERVIEW WITH OFFICIALS

A discussion was held with Mr. Robert Thompson, Reeve, and Mr. A. E. Woollard, Clerk-Treasurer. Dr. F. J. Moran, Medical Officer of Health, was not available for discussion at this time.

VILLAGE OF BOBCAYGEON

The Village of Bobcaygeon is located on the Otonabee River, a connecting waterway between Sturgeon and Pigeon Lakes. The river flows in an easterly direction to drain Sturgeon Lake into Pigeon Lake, losing approximately six feet in elevation in the process. According to the 1966 Municipal Directory, the population is approximately 1,251. The area of the Village is approximately 2,874 acres.

WATER USES

Municipal

A municipal water works built as an OWRC project was under construction at this time to serve the southern section of the Village. The water is to be taken from Sturgeon Lake above the dam and afforded fine screening, vacuum filtration, taste and odour treatment and pre- and post-chlorination in a 120,000-gallon per day capacity treatment plant. Plant storage will amount to 53,000 gallons.

A spring supply, feeding street-side taps by gravity, has served the northern section of the Village for many years. However, the water from this source has been shown to be of unsatisfactory bacterial quality and therefore unfit for human consumption. Although this Commission's staff have recommended chlorination of the water, no action has been taken to install such disinfection facilities. In view of the nature of this water works, it would be desirable that the new water works being constructed be extended to serve the northern section of Bobcaygeon.

Industrial

Industrial demands for water in the Village are supplied by private wells.

SURFACE WATER DRAINAGE

Two municipal storm sewers convey storm drainage from the northern section of the Village and discharge to Big Bob Channel at the Main Street bridge, while another storm sewer discharges at the foot of John Street downstream of the dam. Storm flows originating west of John Street are carried in a concrete-lined ditch to empty into the river immediately below the dam. The business block on Bolton Street in the southern section of the Village is served by a storm sewer that discharges to the Otonabee River near the foot of William Street.

SANITARY WASTE DISPOSAL

Sanitary waste disposal is effected on an individual basis. However, the satisfactory sub-surface disposal of sanitary wastes in this village has proved extremely difficult due to the general lack of overburden. These conditions were reflected to some extent in the storm sewer outfall sample results. Only marginal success has been experienced in the sub-surface disposal of laundromat wastes.

INDUSTRIAL WASTE DISPOSAL

The satisfactory disposal of process wastes at both the local dairy and the creamery has been achieved only on an intermittent basis.

MUNICIPAL REFUSE DISPOSAL

The local refuse disposal site is located near the north-easterly limits of the Village with access from Highway 36. No problems have been reported concerning any effects this site might exert on water quality.

SAMPLING PROCEDURE

Samples were collected from pertinent locations on the Otonabee River and Big and Little Bob Channels and from municipal and private sewer outfalls.

SAMPLE RESULTS

The pertinent laboratory analyses results together with an interpretation of the various analyses employed are appended to this report.

The analyses employed in this survey to assess the quality of surface waters and outfall discharges were biochemical oxygen demand (BOD), suspended solids, anionic detergents reported as ABS, and Most Probable Number of Total Coliforms and E. Coli organisms. The bacteriological examinations were performed at the Peterborough and Regional Laboratory of the Ontario Department of Health, while the chemical analyses were performed at the OWRC Laboratory in Toronto.

The OWRC objectives for surface water quality are that the following concentrations are not exceeded:

BOD	-	4.0 ppm
Coliform Count	-	2,400 coliforms per 100 ml.

The sample results are tabulated in the appendices as follows:

Table I - Otonabee River, Big and Little Bob Channels
Table II - Sewer Outfalls

Although generally satisfactory water quality is indicated in the surface water sample results, outfall sample findings together with visual observations made during this investigation confirm the reports that inadequately treated sanitary wastes including laundry wastes have access to the Bolton Street storm sewer.

A private sewer from the Bobcaygeon Creamery was sampled and found to contain grossly polluted wastes. A two-inch diameter pipe had been installed inside the John Street storm sewer to convey process wastes from the Kawartha Dairy to the receiving stream. No sample was collected since the pipe was submerged.

SUMMARY

A water pollution survey of the Village of Bobcaygeon was performed by OWRC staff on May 3, 1966. Investigations were made to assess the quality of the Otonabee River and associated channels and to obtain information concerning discharges thereto.

This survey was of assistance in locating outfalls where deleterious sanitary and industrial wastes were gaining access to surface waters.

Although surface water quality was indicated as satisfactory at the time of the survey, inadequately treated wastes have access to the river at several points. This results in intermittent adverse conditions and subsequent complaints.


In view of the difficulties experienced in providing satisfactory sub-surface disposal of wastes in the low-overburden area, it is obvious that municipal sewage treatment facilities are necessary.

Although the northern section of Bobcaygeon is supplied with spring water which can be obtained at a street-side tap, this water has been shown to be of unsatisfactory bacterial quality and therefore unsafe for human consumption. A new water works was being constructed to serve the southern section of the village.

RECOMMENDATIONS

1. The installation of a municipal sewage works should be given serious consideration at Bobcaygeon.
2. The northern section of the village should be provided with a satisfactory water supply system.

Approved by:


L. G. South, District Engineer,
Division of Sanitary Engineering.

Prepared by: A. D. McConnell
mh

INTERPRETATION OF ANALYSES

The analyses employed to determine the quality of the water samples were biochemical oxygen demand (BOD), solids and detergents, bacteriological examinations were performed to determine the presence of coliform organisms.

The BOD of sewage or polluted waters is the oxygen required during stabilization of the decomposable organic or chemical matter by aerobic biochemical action. A five-day BOD determination with incubation at 20 degrees Centigrade is reported. A high BOD is indicative of organic or chemical pollution.

The analyses for solids include tests for total, suspended, and dissolved solids. The results are reported in ppm. The first test measures both the solids in solution and in suspension. The suspended solids indicate the measure of undissolved solids of organic or inorganic nature in suspension. Significant sources of suspended solids are sewage, industrial wastes and land erosion. The dissolved solids are a measure of those solids in solution.

The presence of anionic detergents as ABS usually is an indication that domestic waste is contained in the sample.

The Most Probable Number (MPN) method provides an index of the number of coliform organisms per 100 cubic centimetres of the water sample. The Multiple Tube Fermentation technique was employed. Although the presence of coliforms indicates pollution from human or animal excrement, or from some non-faecal sources, E. Coli organisms originate in the intestinal tract of humans and other warmblooded animals.

TABLE I

OTONABEE RIVER, BIG AND LITTLE BOB CHANNELS

Date Sampled: May 3, 1966

Sample Point No.	Description	5-Day BOD	S O L I D S			BACTERIOLOGICAL EXAMINATION	
			Total	Susp.	Diss.	M.P.N.	
						Total Coliforms	E.Coli
T 140.01	Otonabee River at dam	1.6	136	2	134	0	0
T 140.0 W	North side of Big Bob Channel at bridge	1.7	76	73	---	43	0
T 140.0 MC	South side of Big Bob Channel at bridge	1.6	58	2	56	0	0
TC 140.0	Canal opposite submerged sewer outfall at bridge	1.5	48	3	45	4,300	2,300
T 139.2	Big Bob Channel near east village limits	1.2	82	9	73	23	0
T 139.0	Little Bob Channel at south end bridge	3.6	150	56	94	230	230

NOTE: All analyses except pH are reported in ppm unless otherwise indicated.

TABLE II

SEWER OUTFALLS

Date Sampled: May 3, 1966

Sample Point No.	Description	5-Day BOD	S O L I D S			Anionic Deter- gents as ABS	BACTERIOLOGICAL EXAMINATION M.P.N.	
			Total	Susp.	Diss.		Total Coliforms	E. Coli
T 140.01 D	Ditch to Big Bob Channel at north end of dam	1.2	186	11	175	0.0	93	0
T 150.01 W	Storm Sewer outfall at John Street	1.3	314	3	311	0.0	2,300	2,300
T 140.0 W	Storm sewer outfall at Main Street	0.6	222	3	219	0.0	230	230
T 139.2 W	Bolton Street storm sewer outfall to Otonabee River	10.0	406	254	152	0.5	240,000+	240,000+
T 139.21 P	Private sewer outfall from Bobcaygeon Creamery to Otonabee River	640.0	1332	590	742	---	240,000+	110,000

NOTE: All analyses except PH are reported in ppm unless otherwise indicated.



- LEGEND**
- T-139-21 — STREAM SAMPLING POINT SHOWING MILEAGE
 - T-140-01 — OUTFALL SHOWING STREAM AND MILEAGE
 - D — TYPE OF OUTFALL
 - D — DRAINAGE OR DITCH
 - P — PRIVATE SEWER
 - W — STORM SEWER

ONTARIO WATER RESOURCES COMMISSION	
VILLAGE OF BOBCAYGEON	
WATER POLLUTION SURVEY	
1966	
SCALE : 600 300 0 600 FEET	
DRAWN BY : R.S.	DATE : SEPT., 1966
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